

Engineering nature to prevent disease signals potential of synthetic biology



Aedes aegypti mosquitoes are seen inside Oxitec laboratory in Campinas, Brazil on Feb 2, 2016. PHOTO: REUTERS

PUBLISHED JUN 13, 2017, 2:21 PM SGT



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SINGAPORE - If mosquitoes could be "engineered" to die before they can reproduce, diseases which are spread by these insects, such as Zika and dengue, could be slowed down.

This solution, which involves genetically modifying male mosquitoes to pass on a gene that kills their offspring, is being developed by Intrexon, a United States-based company that creates biologically based products and processes using synthetic biology.

Synthetic biology refers to the application of engineering principles to the

fundamental components of biology.

"With far less than the cost of palliative care for dengue alone, we can make this problem go away," said Mr Randal Kirk, chief executive of Intrexon, the parent company of Oxitec.

Oxitec's work centres on genetically altering mosquitoes. It has done trials in Brazil, Panama and the Cayman Islands that showed that modified mosquitoes can reduce localised Aedes mosquitoes, which carries the viruses, by more than 90 per cent.

Using GM insects as a "living insecticide" to control pest populations is one of the ventures that Mr Kirk's company supports. Others include creating apples that do not brown, producing salmon that grows twice as fast, and cloning animals.

He is one of the 100 experts speaking at the Seventh International Meeting on Synthetic Biology, which opens on Tuesday (June 13). The event is co-organised by the National University of Singapore's Synthetic Biology for Clinical and Technological Innovation (SynCTI), the BioBricks Foundation, a public benefit organisation in the US working to ensure that synthetic biology is conducted in an open and ethical manner, and SynBioBeta, an international community of entrepreneurs, investors, policy makers and enthusiasts devoted

to the responsible growth of the synthetic biology field.

The four-day conference will see around 900 participants from over 40 countries gather to share and learn about topics related to the field of synthetic biology.

During the opening ceremony at the NUS University Cultural Centre, Mr Desmond Lee, minister in the Prime Minister's Office and Second Minister for Home Affairs and National Development, said that Singapore "recognises the potential of synthetic biology as a future economic driver".

"Synthetic biology has wide-reaching applications from agriculture and biomanufacturing, to ground-breaking cancer treatments and medicines, to even information technology and fashion," he said.

TOPICS: BIOMEDICAL SECTOR/BIOTECHNOLOGY SCIENCE
